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PRELIMINARY TRANSPORTATION OVERVIEW

THE PAVILION
AT
PARK SQUARE

Prepared for:

PAVILION LIMITED PARTNERSHIP
P.O. Box 9059
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Prepared by:

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HMM ASSOCIATES INC.
ENGINEERS, ENVIRONMENTAL CONSULTANTS & PLANNERS

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MEMORANDUM

TO: PARK PLAZA CIVIC ADVISORY COMMITTEE

FROM: HMM ASSOCIATES, INC.

DATE: JULY 13, 1988

SUBJECT: THE PAVILION AT PARK SQUARE
PRELIMINARY TRANSPORTATION OVERVIEW/PROGRESS REPORT

HMM Associates, Inc. (HMM) is in the process of completing a Preliminary Transportation Overview for the Pavilion Project at Park Square. Some of the information investigated for this overview includes:

1) Existing AM and PM peak hour turning movements at five (5) intersections surrounding the Pavilion site including Level of Service operation.

2) Assignment of project vehicle trips from the proposed Pavilion project for daily, AM peak, and PM peak hours by land use (i.e., residential, office, retail).

3) Project impacts on pedestrian traffic during the AM and PM peak hours.

4) An evaluation of project impacts given two (2) vehicle access alternatives including residential drop-off/pick-up along Charles Street ("Porte Cochere") – with Providence Street open and closed, and residential access road through development from Charles Street – with Providence Street open and closed. These combinations of access to and through the site lead to analysis of four (alternative) patterns.

A complete transportation overview will be made available to the CAC following integration of CAC and project developer comments into the narrative.

A Traffic Access Plan as mandated by BRA's Article 31 and Boston Transportation Department requirements will provide information on the detailed access strategy selected by the developer and will suggest mitigation measures to reduce any transportation impacts from the proposal.

cc: The Pavilion Corporation

Enclosure
2680–1/1501E

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1. DATA COLLECTION

1. Field Inventory

- Geometrics
- Signal Timing
- On-Street Parking

2. AM & PM Peak Hour Turning Movement Counts

- Charles Street at Boylston Street
- Charles Street at Providence Street
- Charles Street at Transportation Center Garage
- Charles Street at Stuart Street
- Stuart Street at 57 Garage/Broadway

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2. PROJECT TRIP GENERATION

TABLE 2-1
DAILY PERSON TRIP GENERATION

	Use		Person Trip Rate Per Dwelling Unit or SF			Person Trips	
			In	Out	Source	In	Out
•	Residential (110 Units)		4.5	4.5	(1)	495	495
•	Office	- Employee	4.1	4.1	(2)	328	328
	(80,000 SF)	- Non-Employee	2.5	2.5	(3)	200	200
		- Total	6.6	6.6		528	528
•	Retail	- Employee	2.7	2.7	(3)	54	54
	(20,000 SF)	- Non-Employee	15.6	15.6	(3)	312	312
		- Total	18.3	18.3		366	366
	Total Daily Person Trips					1389	1389

Source: (1) Trip Generation Manual, 4th Edition, Institute of Transportation Engineers, 1988. ITE vehicle trips converted to person trips assuming an average of 1.4 persons per car and a 10% allowance for non-auto travel. These rates produce a slightly higher person trip generation for peak hour periods than surveys have indicated at the Prudential Center and Tremont on the Common, however, are considered acceptable for this study.

(2) Prudential Survey, Cambridge Systematics, 1987

(3) 500 Boylston Street Project DEIR, Skidmore, Owings, Merrill, et. al., October 1984; Copley Place EIR, HMM Associates, Inc., 1980

TABLE 2-2
PEAK HOUR PERSON TRIPS

		Rate or % Peak Hour Contribution			Peak Hour Person Trips	
Use		In	Out	Source	In	Out
• AM Peak Hour						
Residential* (110 Units)		.11	.57	(1)	12	63
Office**	- Employee	55%	0%	(3)	180	0
(80,000 SF)	- Non-Employee	10%	0%	(3)	20	0
Retail**	- Employee	10%	0%	(3)	5	0
(20,000 SF)	- Non-Employee	0%	0%	(3)	0	0
Total AM Peak Hour					217	63
• PM Peak Hour						
Residential*		.58	.29	(1)	64	32
Office**	- Employee	0%	55%	(3)	0	180
	- Non-Employee	0%	20%	(3)	0	40
Retail**	- Employee	10%	20%	(3)	5	11
	- Non-Employee	5%	10%	(3)	16	31
Total PM Peak Hour					85	294

Source: (1) Trip Generation Manual, 4th Edition, Institute of Transportation Engineers, 1988. ITE vehicle trips converted to person trips assuming an average of 1.4 persons per car and a 10% allowance for non-auto travel. These rates produce a slightly higher person trip generation for peak hour periods than surveys have indicated at the Prudential Center and Tremont on the Common, however, are considered acceptable for this study.

(2) Prudential Survey, Cambridge Systematics, 1987

(3) 500 Boylston Street Project DEIR, Skidmore, Owings, Merrill, et. al., October 1984; Copley Place EIR, HMM Associates, Inc., 1980

* Trips per dwelling unit

** Indicates the percentage of daily trips, by trip type, made during the peak hour.

TABLE 2-3

MODAL SPLIT

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Use		Walk	Transit	Auto	Source
Residential		45%	30%	25%	(1, 2)
Office	- Employees	4%	51%	45%	(3)
	- Non-Employees	26%	17%	57%	
Retail	- Employees	16%	58%	26%	(3)
	- Non-Employees	55%	23%	22%	

Source: (1) Diversity and Change, 1970-1980, BRA, 1986

(2) Transportation Study and Access Plan for Parkside West, HMM Associates, Inc., 1987

(3) Prudential Survey, Cambridge Systematics, 1987

TABLE 2-4

PERSON TRIPS BY MODE

- Residential

Person Trips By Mode	Average Daily Arrivals	Average Daily Departures	AM Peak Hour In	AM Peak Hour Out	PM Peak Hour In	PM Peak Hour Out
Walk	222	222	5	28	29	14
Transit	149	149	4	19	19	10
Auto	124	124	3	16	16	8
TOTAL	495	495	12	63	64	32

- Office

	Transit			Walk			Auto			Total Person Trips
	Employee	Other	Total	Employee	Other	Total	Employee	Other	Total	Trips
Daily										
IN	167	34	201	13	52	65	148	114	262	528
OUT	167	34	201	13	52	65	148	114	262	528
AM Peak Hour										
IN	92	3	95	7	5	12	81	12	93	200
OUT	0	0	0	0	0	0	0	0	0	0
PM Peak Hour										
IN	0	0	0	0	0	0	0	0	0	0
OUT	92	7	99	7	10	17	81	23	104	220

- Retail

	Transit			Walk			Auto			Total Person Trips
	Employee	Other	Total	Employee	Other	Total	Employee	Other	Total	Trips
Daily										
IN	31	50	81	9	181	190	14	81	95	366
OUT	31	50	81	9	181	190	14	81	95	366
AM Peak Hour										
IN	3	0	3	1	0	1	1	0	1	5
OUT	0	0	0	0	0	0	0	0	0	0
PM Peak Hour										
IN	3	4	7	1	8	9	1	4	5	21
OUT	6	7	13	2	17	19	3	7	10	42

TABLE 2-5

PROJECT VEHICLE TRIPS

Auto Occupancy*	Employee	Non-Employee
Residential	-	1.5 persons/auto
Office	1.5 persons/auto	1.2 persons/auto
Retail	1.4 persons/auto	1.6 persons/auto

	Residential	Office			Retail			Total Vehicle Trips
		Employee	Other	Total	Employee	Other	Total	
Daily								
IN	83	99	95	194	10	51	61	338
OUT	83	99	95	194	10	61	61	338
AM Peak Hour								
IN	2	54	10	64	1	0	1	67
OUT	11	0	0	0	0	0	0	11
PM Peak Hour								
IN	11	0	0	0	1	3	4	15
OUT	5	54	19	73	2	4	6	84

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* Source: Copley Place EIR, HMM Associates, Inc., 1980; 500 Boylston Street Project DEIR, Skidmore, Owings, Merrill, et. al., October 1984

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3. PROJECT IMPACTS

4.1 Transit/Pedestrian

- Pedestrian traffic increased by 899 one-way trips daily
    - 468 walk
    - 431 walk to/from transit
- AM peak hour inbound pedestrian trips
    - 17 walk
    - 117 walk from transit
- PM peak hour outbound pedestrian trips
    - 64 walk
    - 131 walk to transit
- Existing Pedestrian Volumes (two-way) in the vicinity of the proposed project during the PM peak hour
    - Charles Street west side = 55
    - Charles Street east side = 135

3.2 Traffic Volume Increases

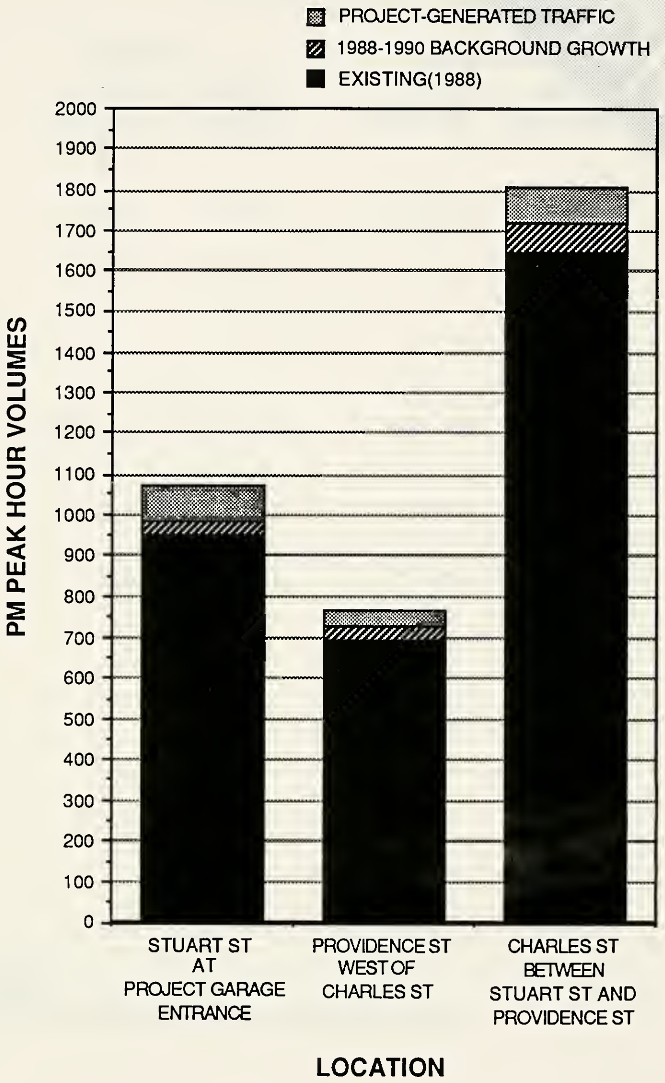

FIGURE 1
TRAFFIC VOLUME INCREASES

3.3 Vehicle Operations

LEVEL OF SERVICE SUMMARY

	1988 Existing				1990 No Build				1990 Build			
	AM		PM		AM		PM		AM		PM	
Intersection	LOS*	RC**	LOS	RC	LOS	RC	LOS	RC	LOS	RC	LOS	RC
Unsignalized												
Stuart Street/ 57 Garage	B	333	C	274	B	315	C	251	C	288	C	247
Charles Street/ Transportation Garage	A	496	B	382	A	476	B	359	A	475	B	344
Stuart Street/ Site Drive	-	-	-	-	-	-	-	-	D	199	D	151
Intersection	LOS	AD***	LOS	AD	LOS	AD	LOS	AD	LOS	AD	LOS	AD
Signalized												
Stuart Street/ Charles Street	C	18.6	C	18.7	C	22.1	C	20.7	C	22.1	C	20.8
Boylston Street/ Charles Street	C	19.6	C	21.1	C	20.4	C	21.8	C	20.4	C	21.9

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* LOS = Level of Service

** RC = Reserve Capacity

*** AD = Average Delays - Overall intersection average delay in seconds

3.4 Truck and Taxi Trip Generation

Truck Trip Generation

Use	Truck Trip Generation Rate (One-Way, Trucks/Day)	% in Peak Hour (PM)	Truck Volume Daily	Truck Volume PM Peak Hour
Residential	-negligible	-	-	-
Office	.11/1000 sf[1]	15%[1]	9	2
Retail	.24/1000 sf[2]	15%[1]	5	1

Daily Taxi Arrivals

	Office	Retail	Residential
Generation Rate	.75 arrivals per 100 person trips[3]	.75 arrivals per 100 person trips[3]	.75 arrivals per 100 person trips[4]
Taxi Trips (one-way)	4	3	4

Source:
(1) Transportation/Traffic Analysis for 101 Federal Street, HMM Associates, 1984
(2) Copley Place EIR, HMM Associates, 1980
(3) Highway Research Board Report No. 62, Urban Travel Patterns for Hospitals, Universities, Office Buildings and Capitols, 1969
(4) Assumed to be the same as office and retail uses.

3.5 Vehicle Access Alternatives

Alternative	Assumed Street Network	Proposed Project Access	Impacts
1A	With Existing Street Network	• Garage access via Stuart Street • Residential drop-off, pick-up along Charles Street ("Porte Cochere")	• Estimated 6 residential vehicles (including taxi trips) using drop-off during PM peak hour will present no queuing or operation problems. • Garage will operate with some delays to vehicles exiting the garage during the PM peak hour, but will not significantly impact operations along Stuart Street. • Loading/delivery vehicle access will be provided along Broadway. Projected truck volumes are light and would not impact operations. • Overall - Access alternative will provide acceptable service levels.
1B	With Providence Street closed, two-way (English Style) Boylston Street	• Garage access via Stuart Street • Residential drop-off, pick-up along Charles Street ("Porte Cochere")	• Estimated 6 residential vehicles (including taxi trips) using drop-off during PM peak hour will present no queuing or operation problems. • Garage will operate with some delays to vehicles exiting the garage during the PM peak hour, but will not significantly impact operations along Stuart Street. • Circulation route for residential drop-offs will be lengthened. • Truck/delivery access will be less direct • Overall, access alternative will provide acceptable service levels, however, circuitous routing will be increased.

Alternative	Assumed Street Network	Proposed Project Access	Impacts
2A	With Existing Street Network	• Garage access via Stuart Street • Service Road through development from Charles Street to Broadway	• Estimated 6 residential vehicles (including taxis) plus 2 trucks are projected to use the Charles Street access during PM peak hour. • This alternative will likely attract some additional cut-through traffic from the Providence Street left turn. • Garage will operate with some delays to vehicles exiting the garage during the PM peak hour, but will not significantly impact operations along Stuart Street. • Overall, access alternative will provide acceptable service levels but may be impacted if cut through, traffic is not discouraged
2B	With Providence Street closed, two-way (English-Style) Boylston Street	• Garage access via Stuart Street • Service Road, through development, from Charles Street to Broadway	• Estimated 5 residential vehicles (including taxis) plus 2 trucks are projected to use the Charles Street access during PM peak hour. • Major cut through traffic potential, up to 600 vehicle trips could be expected if not physically discouraged. Loading and servicing, as well as residential drop-off/access, would be significantly impacted if this increase in cut through traffic were realized. • Overall, access alternative not recommended due to potential for significant cut through traffic, through the development.